AEMC

INFORMATION

# Making sure there's enough capacity in the power system

**The national electricity market is designed to have enough generation capacity to meet consumers' demand for power. This capacity is provided through:**

- generation – from large, centralised generators like hydro, coal and gas plants and wind and solar farms, as well as decentralised generation like rooftop solar
- demand response – when customers agree to reduce their electricity use in return for a payment or other reward

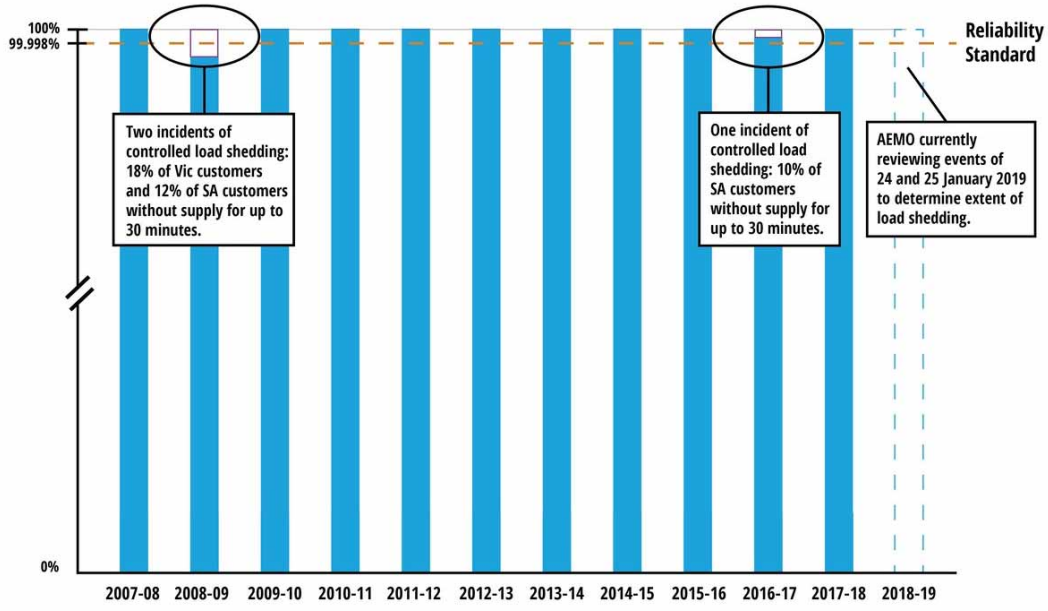
## What causes disruptions to power supplies?

While there's almost always enough generation capacity in the power system to meet consumers' needs, sometimes that power can't get to consumers due to system stability issues or faults in electricity poles and wires.

In fact, almost all interruptions to customers' power supplies are due to problems in the grid, for example when a pole is knocked down in a storm or power lines are knocked out due to bushfires. A small percentage of interruptions – around three per cent – are due to technical issues resulting in system security events. An even smaller percentage – around 0.2 per cent – are due to not having enough generation or demand response capacity in the system.

## Power system's ability to meet demand

On extremely rare occasions, there is a shortage of generation capacity to meet all consumer demand when and where it's needed. This has happened on only a few days during the past decade, all during extreme heatwaves. The shortages occurred on business days when there was very high demand for residential air conditioning at the same time as industry and businesses were at their peak working load. As a result, some customers in Victoria and South Australia lost power for up to 30 minutes.




AUSTRALIAN ENERGY MARKET COMMISSION LEVEL 6, 201 ELIZABETH STREET SYDNEY NSW 2000
T: 02 8296 7800 E: AEMC@AEMC.GOV.AU W: WWW.AEMC.GOV.AU

## Managing supply shortages

When demand for electricity exceeds supply, the system operator, AEMO, can direct network businesses to interrupt supply to some customers to bring supply and demand back into balance and help avoid a system-wide blackout.

This works by interrupting supply to a group of customers for say, half an hour, then rolling on to a different group of customers for half an hour or so. This is referred to as controlled load shedding.

Importantly, controlled load shedding does not include sensitive groups such as hospitals and emergency services. Also, businesses or energy users that need continuous energy supply, for example data centres and customers on life support, have their own back-up plans such as on-site diesel generators.

## The power system's safety net

Shedding load is a last resort to manage a shortage of supply – and hardly ever used. This is because AEMO has a range of other tools they use first to head off an impending shortage.

First, AEMO publishes forecasts of potential supply shortages. As the market sees the projections, generators and demand response providers can respond. For example, a generator may reschedule a planned maintenance outage for the period when supply is tight, to take advantage of likely higher prices.

If the market fails to respond to the forecasts, AEMO intervenes directly in the market. For example, AEMO can use the Reliability and Emergency Reserve Trader (RERT), a type of strategic reserve which allows AEMO to pay a premium for additional generation or demand response to be on standby.

AEMO can also direct a generator to increase its output.

In the summer of 2017-2018 around $52 million was paid to generators and demand response providers to be on standby and participate in the RERT.

## What about interruptions caused by network and technical problems?

**Network reliability standards** guide how much investment in poles and wires is needed to deliver a specified level of supply to consumers. These are set by state and territory governments.

Investments in transmission and distribution reliability are ongoing and involve a trade-off between the cost of building and maintaining networks, which is ultimately paid for by consumers through their bills, and the value placed on reliability by consumers.

**Technical problems** – also known as system security events – are mostly caused by sudden equipment failure that results in the system operating outside its technical operating limits, such as voltage and frequency. With more wind and solar connecting to the grid, the technical characteristics of the system are changing. In particular, it is becoming harder for the system to withstand disturbances such as a change in demand or supply.

The AEMC has introduced a package of new tools to help AEMO address system security needs, including enhanced technical performance standards for new generators and new requirements for networks to provide minimum levels of inertia and system strength. Work to strengthen system security is ongoing to reduce the risk of widespread outages.

## What is the Reliability Standard?

The reliability standard guides how much capacity is needed in the national electricity market.

It signals to the market how much to invest in new generation and demand response, and also guides AEMO's forecasting and operational decisions.

The current reliability standard sets an expectation that there will be enough supply to meet demand 99.998% of the time each year. The standard is set every four years following a review by the AEMC's Reliability Panel which comprises experts from large energy users, consumer groups, generators, network businesses, retailers and AEMO.

Setting the standard is about striking a balance between having enough generation capacity available to meet consumer demand for the vast majority of scenarios, and keeping costs as low as possible for consumers.

For example, it may be far too expensive to plan for a very rare, say one-in-ten year event, by building new generation and more poles and wires to support it – particularly when that capacity may never even be used. The alternative way to manage such extremely rare events is by AEMO using the RERT and issuing directions, or, as a last resort, through controlled load shedding.

For information contact:

Media: Communication Director, Prudence Anderson 0404 821 935 or (02) 8296 7817

31 January 2019